REMARKS

This application has been carefully reviewed in light of the Office Action dated May 27, 2003. Applicant has amended claims 1, 6, 8 and 13 and added claims 16-19. Reconsideration and favorable action in this case are respectfully requested.

Applicant notes with appreciation that the 35 U.S.C. §112 objections and rejections have been withdrawn.

The Examiner has rejected claims 1-15 under 35 U.S.C. §102(b) as being unpatentable over U.S. Pat. No. 5,838,583 to Varadarajan. Applicant has reviewed this reference in detail and does not believe that it discloses or makes obvious the invention as claimed.

In the Office Action of May 27, 2003, the Examiner contends that the Varadarajan reference discloses the use of cluster constraints which fix the placement of datapath functions within a unit and this placement occurs prior to the optimization of other cells.

Applicant has reviewed the clustering aspect of Varadarajan, and does not believe that it illustrates the use of a fixed status to datapath cells. In a datapath region with no clustering (region 1102 of Figure 11 of Varadarajan), the datapath placer is free to swap the relative positions of any of datapath functions within the region (col. 15, lines 53-59). In a datapath region with clustering (region 1101 of Figure 11), certain functions are grouped into a cluster (functions 1109, 1110 and 1111) and the datapath placer must treat the functions as a unit and *can move this unit relative to relative to non-clustered datapath functions in the region 1101* (col. 15, lines 60-64). Hence, clustering does not fix any datapath function relative to standard cells – it only fixes datapath functions relative *to other datapath functions within a cluster.*

Figure 2 shows that the datapath elements in Varadarajan are placed and routed (steps 206 and 208) prior to arranging the standard cells using the incremental standard

cell placer (205). This is significantly different than applying a "fixed status" to datapath cells prior to placing the standard cells. Importantly, the routing of the datapath cells prior to placement of the standard cells can significantly decrease the availability of free area available to the standard cells.

In Varadarajan, routing of the datapath cells within a datapath function can be prevented only by using an "irregular" property for the datapath function (col. 10, lines 22-62). While routing is inhibited, the irregular property has the downside that the cells are no longer fixed, since they may be moved by the standard cell placer.

Hence, Varadarajan does not show a system where the datapath cells are assigned a fixed status and placement of the remaining cells is performed prior to routing.

Accordingly, Applicants respectfully request allowance of independent claims 1 and 8. Furthermore, Applicants respectfully request allowance of dependent claims 2-7 and 9-19.

In particular, added claims 16-19 describe another feature not shown in Varadarajan. In the present invention, the datapath cells are placed within matrices of slots ordered in rows and columns. Unused space may be provided between rows or columns (or both) such that open space in provided in the matrix (best shown in Figure 4 of the present specification). The space may thus be provided throughout the matrix for the remaining cells. By adjusting column and row spacing, free space 38 can be planned within the matrix to allow timing-driven placement of embedded standard cells along with the structured placement cells.

This aspect of the invention is not shown in the Varadarajan reference. Varadarajan merely shows that free space can be used in placement of the standard cells (Fig. 9d), but does not show any system for providing unused space in a desired location.

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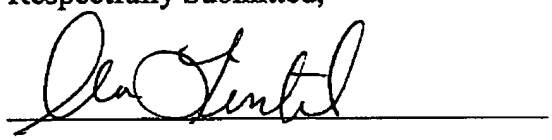
The Commissioner is hereby authorized to charge any fees or credit any overpayment, including extension fees, to Deposit Account No. 20-0668 of Texas Instruments Incorporated.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Alan W. Lintel, Applicants' Attorney at (972) 664-9595 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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